DOCUMENT RESUME

ED 365 181 HE 026 861

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TITLE Graduate Retention: An Investigation of Factors Relating to Older Female Graduate Students. ASHE Annual Meeting Paper.
PUB DATE 4 Nov 93
NOTE 27p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (18th, Pittsburgh, PA, November 4-10, 1993).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143) -- Information Analyses (070)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; *Academic Persistence; *Adult Students; College Students; Doctoral Degrees; Family Influence; *Females; Graduate Students; Graduate Study; Higher Education; Literature Reviews; *Married Students; Masters Degrees; Nontraditional Students; Peer Relationship; Student Financial Aid; Teacher Student Relationship; Womens Education
IDENTIFIERS *ASHE Annual Meeting

ABSTRACT

While admissions at the undergraduate level are experiencing a surge of students over 30 years of age, the pool of traditionally aged students is declining. These phenomena indicate that older (over age 30) students will also be enrolling in graduate programs in increasing numbers. This paper addresses the issue of retention as it pertains to older female graduate students. Data are examined from a fall 1991 survey and its 1992 followup at a large Midwestern research university. The study evaluated such potential obstacles to female graduation as concern family issues, relationships with faculty and fellow students, difficulty of the coursework, and financial problems and financial aid. Results of a logistic regression on a sample of 81 respondents found that the factor most predictive of persistence was not being married. Other important variables supporting persistence including maintaining a positive relationship with fellow students, maintaining a positive interaction with faculty, and achieving a high grade point average. An appendix contains the measurement scales used in the analysis. (Contains 50 references.) (GLR)

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Graduate Retention: An Investigation of Factors Relating to Older Female Graduate Students

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Pittsburgh Hilton and Towers, Pittsburgh, Pennsylvania, November 4-7, 1993. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Abstract: While admissions at the undergraduate level are experiencing a surge of students over 30 years of age (U. S. Bureau of the Census, 1991), the pool of traditionally aged students is declining (Baird 1990). These phenomena indicate that older (over age 30) students will also be enrolling in graduate programs in increasing numbers. This study addresses the issue of retention as it pertains to older female graduate students. Utilizing a sample from a large Midwestern research university, results of a logistic regression indicate that the important variables to persistence are being unmarried, maintaining a positive student-student interaction, maintaining a positive interaction with faculty, and achieving a high GPA. Obviously, the finding on marriage presents no opportunity for intervention, but the other significant variables offer interesting policy implications.

Graduate Retention: An Investigation of Factors Relating to Older Female Graduate Students

Early inquiries dedicated to the study of under-represented college student populations tended to aggregate heterogeneous groups under the "non-traditional student" umbrella (for example see Bean & Metzner, 1985). More recently, researchers have recognized and acknowledged the dissimilarities among these constituents, have dissected the lump, and have restricted their study population to just a homogeneous sub-sample of students previously aggregated as "non-traditional." For instance, female students (Pirnot, 1987), African-American students (Mallinckrodt, 1988), students of Hispanic origin (Nora, 1990; Nora & Rendon, 1990), Asian students (Endo, 1990; Nagasawa & Espinosa, 1992), community college attenders (Nora, Attinasi, & Matonak, 1990) and students over the conventional age (Stolar, 1991) have been studied in isolation in order to learn group specific details. This paper is proposing an additional step in the dissection and examination of the "non-traditional" student. Specifically, this paper proposes a study of the significant factors relating to retention among female graduate students over the age of 30 years. Because older female graduate students have so rarely been studied, this investigation represents a moderately exploratory attempt. It not only presents an initial step in the identification of the factors important to this group but will also hopefully serve as a springboard from which further studies can advance.

Review of the Literature

Increases in Women

By taking advantage of recent societal changes, women presently constitute the majority of undergraduates (Bean & Metzner, 1985). Consistent with this trend, female students are also enrolling in graduate programs in increasing numbers as

evidenced by the United States Bureau of the Census (1991) projection that women will be earning almost half of all earned doctoral degrees by 1995. Women, however, tend to enter graduate school at an older age than their male counterparts (Farabaugh-Dorkins, 1991). In addition, a study by Gilbert (1982) found that women generally take longer to complete their degree. For many women the delay to go to graduate school and/or the prolonged period until degree completion may be necessitated by the constraints of marriage, the rearing of children, or other domestic responsibilities.

Retention Models

One of the most widely accepted theories of retention in higher education is Tinto's 1975 theoretical model designed for traditional residential undergraduates. Tinto, adopting theories from sociology, anthropology, and economics, equates postsecondary education with personal investment while college withdrawal is likened to suicide. According to Tinto, persistence is likely if the student has integrated him/herself into college life. Integration is a dual concept with both a social and academic side. Tinto measures academic integration by both grades and intellectual development subsequent to college enrollment. Peer-group and faculty interactions are utilized in the gauge of social integration. Tinto strongly emphasizes that although the two integration concepts may be related, they remain distinct. In other words, integration in one system does not guarantee integration in the other (Tinto, 1987). Although Tinto's theory has served the traditional student population well, recent research (Walleri & Peglow-Hoch, 1988) has indicated that the emphasis on social and academic integration may be unreliable for non-traditional student populations.

Bean and Metzner (1985) incorporated many of Tinto's ideas into a model designed for "non-traditional" students. Assuming a less important role for social integration among a population composed of commuter, part-time, and older students, Bean and Metzner substituted factors relating to the external environment (finances,

hours of employment, outside encouragement, and family responsibilities). These environmental variables are presumed to be even more important to the persistence decision than academic variables (Bean & Metzner 1985). When focusing on older students, Bean and Metzner acknowledge the obstacles posed by increased family responsibilities and hours of employment so frequently faced by this sub-population. Recently, Cabrera, Castaneda, Nora, and Hengstler (1992) converged Bean's student attrition model with Tinto's student integration model and found that the influence of environmental, organizational, and personal variables on persistence is more likely to be indirect. They suggested a persistence model integrating the leading factors from both studies.

Although studies of graduate recruitment are prevalent (for example see Olson, 1992; Malaney, 1985; Powers, & Lehman 1983; Turcotte, 1983; Girves & Wemmerus, 1988), there is a dearth of literature or studies regarding the problem of premature college withdrawal among graduate students. A recent study by Pisani and Ethington (1992) reported part-time female students being less likely to persist than any other group, indicates the need for extensive research into this previously neglected area. But before designing a retention model designed specifically for female students, one must first analyze the unique obstacles facing this group.

Female specific obstacles to graduate degree completion

Family issues. For a great number of female graduate students, issues of family and marriage create substantial obstacles to academic success. Feldman (1974) found that while marriage tends to encourage success for male students it is actually an impediment for female students. Further, Baird (1990) suggests that women may experience stress due to multiple role conflicts (i.e., wife, mother, employee, and graduate student). This conflict is probably most severe for those juggling motherhood and student responsibilities because despite the trend towards domestic chore sharing,

most women remain the primary caretaker of children. There is also evidence that many women are uncomfortable securing a more advanced degree than their spouse (Feldman, 1974; Solmon, 1976).

Relations with Faculty. Interpersonal relations with faculty can be a crucial link to the successful completion of a college degree (Stoesz, 1989). One autopsy study of doctoral students reported that almost one half of those contacted cited a poor relationship with an advisor or committee as a significant reason for their exit (Jacks, Chubin, Porter, & Connolly, 1983). But establishing positive relationships with faculty may in fact be more difficult for female students than for their male counterparts (Solmon, 1976). Berg and Ferber (1983) found that female students tend to feel more comfortable in professional relationships with female faculty. Therefore, forming comfortable relationships may be a bit difficult considering that the population of graduate students is almost half female while most graduate faculties remains predominantly male. Additional questions regarding the faculty-student relationship such as: 1) do older students form (or require) the same kind of faculty/student relationships as their younger counterparts and (2) how is the faculty/student relationship affected when the student is equal or older in years than the faculty member have not been addressed by the literature.

Relations with Fellow Students. Relationships established between graduate students are probably as crucial to degree completion as the student-faculty relationship. Numerous studies have concluded that student fellowship and participation are major contributors to perseverance in the degree program (Heiss, 1970; Lozoff 1976; Konner, 1987; Baird, 1990). However, the effect of student age and the subsequent quality of peer relationships have not been thoroughly investigated. Do older students interact with their traditionally aged fellow students similarly to other students? Does interaction with other older students contribute significantly to persistence?

Difficulty of Coursework. Although Tinto (1975) emphasized the importance of academic integration in the persistence equation, several studies have found that women generally tend to have fewer academic problems than men (see Berg & Ferber, 1983). Furthermore, the difficulty of coursework should not present a larger obstacle to older students than to their traditionally aged cohorts since longitudinal studies have not demonstrated intellectual capacity declines with increased age (Lunneborg Olch & DeWolf, 1974; Owens, 1966; Honzik & Macfarlane 1973; Showler and Droege, 1969).

Financial Problems and Financial Aid. The financial concerns associated with college costs are generally addressed when college retention is studied (for example, see Nora, 1990; Cabrera, Stampen and Hansen, 1990). Financial aid has consistently been found to be a significant factor in retention in many recent retention studies (Nora, 1990; St. John, 1990). Older female graduate students should certainly not be an exemption from this rule. As a matter of fact, there is reason to believe that financial concerns are even more salient for this sub-population than for more traditionally aged students. For instance, Gilbert (1982) found that married graduate students generally have greater financial concerns that those that are single. And of course, one of the probable reasons that so many older women attend graduate school on a part time basis, is that they cannot afford full time study.

In summary, the literature regarding college persistence identifies a myriad of factors that probably work in conjunction to form the important decision of persistence. College persistence, like most significant education-related decisions, results from situations both within and beyond the control of the individual and/or the institution. This research specifically addresses the research question, what factors significantly contribute to the retention of female graduate students over the age of 30 years.

Research Procedures

Sample

The setting for this research is a large, urban, research oriented institution located in the Midwest. During the fall of 1991 a questionnaire designed to elicit information about experiences, problems, and demographics was distributed to all graduate students. Subsequently, a follow-up questionnaire was sent to all respondents during the spring of 1992. The fall 1991 survey resulted in 680 respondents. Despite a reminder letter sent to those who had not returned the questionnaire, the response to the follow-up was 280. This study is based on a sub-sample of 81 students who are female, over the age of 30 years, and had responded to both questionnaires.

The following demographic information is provided to provide a sense of the respondents. The women ranged in age from 30 years to 55 years. Racially, respondents were predominantly Caucasian (80.2%), followed by African-Americans (9.9%). The remaining .9% consisted of two Oriental subjects, one Latino subject, and four subjects who responded to the "other" classification. With respect to marital status, 61.7% of the women reported being married while 38.3% reported being either single, divorced, or separated. While almost half (45.7%) of the women reported having no children living at home; 21% had one child, 23.5% had two children, 8.6% had three children while one woman reported having six children living at home. Predictably, more older women enrolled part-time (55.6%) than full time (39.5%). A large majority (82.7%) of the respondents are seeking a master's degree, and 17.3% are seeking a Ph.D.. The sample included 16 non-persisters (19.8%) and 65 persisters (80.2%).

Variables

The dependent variable, persistence, was created and assigned a value of 1 (persister) if the student had either previously graduated or had enrolled for credit during the fall of 1992. Accordingly, a value of 0 was assigned (non-persister) if the student had not graduated and did not enroll during the fall of 1992. Withdrawal could

be assumed if the student did not contiguously enroll because graduate study generally requires consistent registration (see Pisani & Ethington, 1992).

Independent Variables

Scales

All scales were constructed (using the mean response) from items indicating the respondent's agreement with statements concerning their graduate experience. Respondents were instructed to circle numbers on a Likert-type scale (1=strongly disagree to 5=strongly agree). Also utilized were student's ratings of impediments to the graduate process (1 = none to 4= very much). A principle component factor analysis of items germane with this study's objective resulted in the following seven factors with strong internal consistencies; 1) satisfaction with faculty interaction, 2) perceived level of faculty prejudice, 3) satisfaction with student-student interaction, 4) satisfaction with intellectual involvement, 5) extent of the financial impediment, 6) the extent of feelings of a time crunch and 7) the perceived level of support from significant others. The items comprising these scales and their internal consistency reliabilities are given in Appendix A.

Other factors deemed requisite are the student's cumulative grade point average (derived from transcripts), the average number of hours per week of outside employment, enrollment status (0=part-time; 1=full-time), the number of children living at home, and marital status (0= single, divorced, separated or widowed; 1= married).

Analysis

Logistic regression was employed in this study. Ordinary least squares regression was deemed inappropriate based on the dichotomous nature of this study's dependant variable (Hanusheck & Jackson, 1977; Alrich & Nelson, 1986). Logistic

regression not only conforms with this dichotomous probability function, but also allows the mixing of continuous and categorical variables (Hanusheck & Jackson, 1977). After the decision of which variables to include was finalized, the test for conditional effects between part-time and full-time students was performed. Interaction terms were calculated (status times variable) and added to the regression equation. Because the test of the F_{change} was insignificant ($F=1.729$; 11/28 df; $p > .10$) it was assumed that enrollment status does not exhibit a conditional effect in the persistence equation (Norusis, 1990).

The conceptual framework of this study was based on the work of both Cabrera, Casteneda, Nora and Hengstler (1992) and Kinnick and Ricks (1993). As suggested by Cabrera and his colleagues variables perceived to play a significant role in the persistence equation by either Tinto or Bean and Metzner were chosen. The order of block input was based on Kinnick and Ricks (1993); the external environment followed by the internal environment. Using this temporal approach, the external environment (enrollment status, number of dependent children, financial obstacles, marital status, level of support, number of hours of outside employment, degree pursued, and perception of a time crunch) was entered first. The second block of variables added were those deemed internal environment (satisfaction with student and faculty interaction, perceived level of faculty prejudice, satisfaction with intellectual involvement, and GPA).

Results

Based on the study's small sample size, the *a priori* alpha level was fixed at .10. In considering the goodness of fit of a logistic model the pseudo r^2, which represents the proportion of error variance reduced compared to the null model, should be considered (Aldrich & Nelson, 1986). After the addition of the internal environment

variables the pseudo r^2 increased from .158 (only external environment variables) to .299 (f_{change} =2.213, $p < .10$).

Another important measure of model fit is the proportion of cases correctly predicted (PCP). The PCP calculates the percentage of cases that could have been correctly classified based on the input variables alone. Pure chance could have correctly classified about 50% of the cases. The PCP for this study is quite impressive as the percentage using only the external environment is 84.06%; and that value increased to a full 95.65% after the addition of the internal environment variables.

Another consideration of fit in a logistic model is the G^2 to degrees of freedom ratio (Cabrera, 1992). The ratio of this study dropped from .794 with the first block of variables to .331 after the addition of the second block. Although there are no known tests of statistical significance of the G^2 to degrees of freedom ratio, Stage (1990) recommends this ratio be less than 2.5.

Based on the aforementioned goodness of fit parameters, it can be deemed that the independent variables chosen in this study are predictive of persistence in this sample of students, producing a well-specified model.

Table 1 presents the beta weights and corresponding standard errors for the variables utilized in this study. Based on their statistical significance variables found to promote persistence were being unmarried, maintaining a positive student-student interaction, maintaining a positive interaction with faculty, and achieving a high GPA. Also presented in Table 1 are the Delta-p calculations for the significant variables. According to Petersen (1985) the Delta-p statistic provides an estimate of the change in the probability of the dependent variable resulting from a unit change in the predictor variable.

Insert Table 1 about here

Discussion

Retention issues are extremely salient in light of the present economic situation. Institutions of higher education are experiencing retrenchment due to decreased funding, a dwindling pool of traditionally aged students (Baird 1990), and a decreasing percentage of prospective students capable of emerging from their personal financial casualties. Farabaugh-Dorkins (1991) found that attrition is even more prevalent among non-traditional students than it is for those classified as traditional.

Using the guidelines for goodness of fit of a logistic model, this study represents a realistic attempt in identifying those factors responsible for prediction of persistence of this sample of older female graduate students. However, due to the small sample size, significance was difficult to achieve. The results of this study, of course, cannot be generalized because the subjects were from only one institution and were monitored for only two semesters. However, the findings do suggest the need for future research on the persistence of older female graduate students using longitudinal data extending over a longer period of time with subjects from diverse types of institutions.

This study indicates that the factor most predictive of persistence of this sample is **not** being married. The model predicts that being married increases the probability of premature withdrawal by 83.4%! Although this powerful finding is not under the direct control of the institution, the institution can indirectly aid these women, by providing assistance in the areas consistent with marital/graduate school disharmony. For instance, alleviating long commutes with distance learning techniques such as satellite classrooms, instruction via modem, or lectures on videocassette. The intrusion of classroom meetings may become less prominent if the classes are more conveniently timed. The addition of weekend graduate classes may eliminate the procedure that many employed graduate students have been forced to perform: a frantic exit from the workplace followed by a battle with rush-hour traffic to conclude with the arrival to the typical evening graduate level course. Policy designed to either enhance student

convenience or reduce unnecessary commuting time may not only enhance retention, but may also encourage recruitment of married students (as well as time-crunched single students).

Another recommendation for alleviating family obligations is a greater dependence on electronic forms of meetings. Telephone conferences, fax document distribution, and communications via electronic mail could be substituted for some of the meetings between the graduate student and her committee, faculty members, and advisor when circumstances preclude physical office visits.

Regardless of institutional policy, married women will continue to have a difficult time balancing both graduate school and marriage. Faculty and administration should be heedful of this conflict and take steps to be compassionate of the student's outside commitments without relaxing course requirements.

Contrary to the literature on older students, this study found that Tinto's emphasis on social integration (1975) was also valid with this sample of older female graduate students. A positive perception of interaction with both fellow students and faculty increased the likelihood of persistence of this sample by 11.72% and 15.95% respectively. Because older females so frequently juggle a multitude of responsibilities, faculty may be hesitant to include them in extra-curricular events or activities. This study, however, suggests these students benefit from interaction with fellow students and faculty. Therefore it is suggested that older females be treated equally with their traditionally aged counterparts and encouraged to attend extra curricular activities, attend professional conferences, and interact socially with both faculty and students. One way to perhaps balance this study's findings on marriage and interaction may be the inclusion of spouses, children, or significant others in extra-curricular activities where applicable.

This study's finding of the significance of student interaction is actually in agreement with many other studies of older female undergraduates. Research indicates

college may provide valuable social opportunities that helps alleviate the myriad difficulties inherent in college enrollment (Hemmingway, 1981; Johnson, Wallace & Sedlacek, 1979; Keogh, 1980; Sewell, 1984).

Contrary to the Tinto and Bean models, the amount of support from family and significant others was not significant for this sample. It may be that these particular older students who "took the plunge" into graduate studies were more independent of exterior support than traditional students. But in light of the finding that marriage hinders this sample's persistence, the insignificance of support remains puzzling. Another explanation may be that offered through Cabrera and his colleagues (1992) that internal factors may indirectly contribute to the persistence equation.

Contrary to the hypothesis, the financial obstacle was not a significant contributor to attrition for this sample. Perhaps financial considerations are a major deterrent to recruitment of older female graduate students allowing the enrollment of only those who have adequate resources or have made appropriate arrangements.

The last finding of this study is that a gain of one GPA point increases the likelihood of persistence by 15.96%. Although a nexus between a high GPA and persistence is not unexpected, it is important to note that good grades are as important to older female graduate students as to their traditional counterparts. It is therefore suggested that older women experiencing academic problems be encouraged to participate in remedial help sessions, be acquainted with tutors, or be directed towards institution study groups. Faculty should not assume that mature students naturally know how to alleviate academic deficiencies.

Multicollinearity may explain why neither part-time status nor hours of outside employment were able to predict attrition as the correlation between these two variables was expectedly high (.50). A similar situation may exist for number of children living at home due to the majority of mothers were also married.

Conclusion

Research (Lenning, Beal, & Sauer 1980; Tinto, 1975; Tinto, 1982) has documented the need for close examination of attrition of specifically older commuter students. This study was an attempt to elicit attention to a previously under-examined minority. This researcher feels that too many studies begin with an established model, originally designed for a specific population, and then directly apply a very different population without first attending to the appropriate groundwork. For that reason, this study was dedicated to identifying the factors most significant to the persistence equation for female graduate students over the age of 30 years. Subsequent research should test the results of this study with other samples, as well as attempt to isolate additional variables germane to this subgroup. Eventually, the accumulated knowledge should be applied to more complex analysis such as structural models that will provide even more insight into this important growing segment of the college student population.

Appendix A Scales

Scale: **Satisfaction with Faculty interaction**
Alpha = .8209

I'm dissatisfied with the opportunity to meet and interact informally with faculty members .*

I've had little opportunity to develop a mentoring relationship with a faculty member.*

Nonclassroom interactions with faculty have had a positive influence on my career goals and aspirations.

Nonclassroom interactions with faculty have had a positive influence on my personal growth.

Scale: **Perceived level of prejudice**
Alpha = .8855

Departmental faculty treat minority graduate students comparably to majority graduate students.

Departmental faculty treat female graduate students comparably to male graduate students.

Scale: **Satisfaction with student interaction**
Alpha = .6333

I've frequently met informally with other graduate students in study groups.

I've seldom* participated in departmental social activities.

I've not developed close* personal relationships with other graduate students.*

Scale: **Satisfaction with intellectual involvement**
Alpha = .7001

Nonclassroom interactions with faculty have had a positive influence on my intellectual growth.

I'm satisfied with my academic experiences in the department.

I feel I've been given an opportunity to show what I can do.

Scale: **Perception of Financial impediment**

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* recalculated to be a positive statement.

Alpha = .7685

The extent of the impediment of financial obligations

The extent of the impediment of lack of financial support by department, college, or University

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Scale: **Stress indicators**

Alpha = .6505

The other things I have to do conflict with my duties as a graduate student.

The extent of the impediment of commuting.

I have not been able to continue with all the activities which I enjoy since I became a graduate student.

The extent of the impediment of time constraints.

The extent of the impediment of job responsibilities.

Scale: **Emotional support by significant others**

extent of support provided by spouse.

extent of support provided by other family members.

extent of support provided by personal friends.

extent of support provided by work associates.

extent of support provided by former teachers.

extent of support provided by fellow graduate students.

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Table 1

Regression Weights

Variable	Beta weight	S. E.	Delta-p[1]
Part-time	-3.6846	2.9033	
# children	-.4529	.8109	
Financial obstacle	-.3814	.9691	
Marriage	-6.8061*	3.5774	-.8342
Support	-.5151	1.2876	
Outside employment	-.1508	.1018	
Ph.D.	11.8563	50.9752	
Time-crunch	-2.6114	2.0647	
Interaction w/students	1.4483*	.8716	.1172
Interaction w/faculty	5.8868*	3.3934	.1595
Faculty prejudice	-.1133	.8883	
Intellectual involvement	3.1235	2.7776	
Cumulative GPA	6.1676*	3.4520	.1596

1 Delta-p's were calculated only for those predictor variables that were found to be significant.

* $p < .10$